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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,206	09/15/2003	Gilbert Neiger	42P14183	2352

7590 10/09/2007  
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EXAMINER
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WILSER, MICHAEL P

ART UNIT	PAPER NUMBER
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2195

MAIL DATE	DELIVERY MODE
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10/09/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/663,206

Applicant(s)

NEIGER ET AL.

Examiner

Michael Wilser

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

1. Claims 1-29 are pending in this application.

### ***Claim Rejections - 35 USC § 101***

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 26-29 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 26-29 are drawn to a machine-readable storage medium, however, the applicant has failed to define in the specification (page 6, line 22 and page 7, lines 1-2 & 15-22) what is included in the storage medium, instead it encompass one of an electrical, optical, acoustical, or propagated transmission signals. The Office considers a propagated transmission signal does not fall within any of the four categories of invention. Therefore, Claims 26-29 are not statutory.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bugnion et al. (US 6,496,847) in view of Schneider et al. (US 5,488,716).

6. As per Claim 1, Bugnion teaches the invention substantially as claimed including a method comprising:

a. detecting an occurrence of a privileged event in a virtual machine environment having guest software (column 2, lines 1-4) and a plurality of virtual machine monitors (Figure 3); and

b. determining which one of the plurality of VMM is to handle the privileged event (column 7, lines 50-55).

7. However Bugnion does not explicitly disclose that the privileged event is not to be handled by the guest software and transitioning control to one of the plurality of VMMs. However, Schneider discloses a method in which the privileged event is not handled by the guest software (abstract, lines 4-6) and transitioning control to one of the plurality of VMMs (column 2, lines 6).

8. It would have been obvious to one of ordinary skill in the art at the time of invention to have had the guest software not handle the event and transfer control in the invention of Bugnion. One would have been motivated to have the guest software not handle the event and transfer control since it is widely known within the virtual machine arts that the guest software is to not have direct access to the underlying hardware, therefore the guest software has to have the monitor make any changes that are needed on the underlying system to protect the integrity of the system.

9. As per Claim 2, Bugnion further discloses the plurality of VMMs includes a main VMM and one or more parallel VMMs (Figure 3).

10. As per Claim 3, Schneider further discloses determining a type of the privileged event (column 5, lines 27-31); and

Bugnion further discloses identifying one of the plurality of VMMs that is designated to handle privileged events of the determined type (column 7, lines 50-55).

11. As per Claim 4, Schneider further discloses accessing a field associated with the privileged event in a resource (column 6, lines 35-40); and

Bugnion further discloses identifying one of the plurality of VMMs that is designated to handle the privileged event based on a value of the field (column 7, lines 50-55).

12. As per Claim 5, Schneider further discloses the field associated with the privileged event is a field associated with a type of the privileged event (column 6, lines 42-45).

13. As per Claim 6, Schneider further discloses the field associated with the privileged event is a field associated with an input-output address range to which input-output address of the privileged event belongs (column 6, lines 43-36).

14. As per Claim 7, Schneider further discloses the value of the field associated with the privileged event is either predetermined or dynamically configurable (column 6, lines 42-46).

15. As per Claim 8, Schneider further discloses evaluating resource usage parameters of the plurality of VMMs (column 5, lines 10-20); and

identifying one of the plurality of VMMs that is designated to handle the privileged event based on evaluation of the resource usage parameters (column 5, lines 10-20).

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16. As per Claim 9, Schneider further discloses the resource resides in any one of a memory, a processor, a chipset, and an input-output device (column 6, lines 35-42).

17. As per Claim 10, Schneider further discloses the privileged event represents any one of an interrupt, an exception, an execution of a privileged instruction, and a platform event (column 5, lines 27).

18. As per Claim 11, Schneider further discloses the privileged event occurs during an operation of guest software (column 5, lines 57-60).

19. As per Claim 12, Schneider further discloses the privileged event occurs during an operation of one of the plurality of VMMs (column 5, lines 57-60).

20. As per Claim 13, Bugnion teaches the invention substantially as claimed including a system comprising:

- a. a plurality of virtual machine monitors (Figure 3);
- b. routing logic to detect an occurrence of a privileged event that cannot be handle by guest software, to determine which one of the plurality of VMMs is to handle the privileged event (column 7, lines 50-55); and

Schneider discloses transitioning control to one of the plurality of VMMs (column 2, line 6).

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21. As per Claim 14, it is rejected for the same reason as Claim 2 above.

22. As per Claim 15, Schneider further discloses the routing logic is to determine which one of the plurality of VMMs is to handle the privileged event by determining a type of the privileged event, and identifying one of the plurality of VMMs that is designated to handle privileged events of the determined type (column 5, lines 27-31).

23. As per Claim 16, Schneider further discloses the routing logic is to determine which one of the plurality of VMMs is to handle the privileged event by evaluating resource usage parameters of the plurality of VMMs, and identifying one of the plurality of VMMs that is designated to handle the privileged event based on evaluation of the resource usage parameters (column 5, lines 10-20).

24. As per Claims 17-19, they are rejected for the same reason as Claim 10-12 above.

25. As per Claim 20, Bugnion teaches the invention substantially as claimed including a system comprising:

- a. a memory having stored therein guest software and a plurality of virtual machine monitors (Figure 3);

- b. a processor, coupled to the memory, to execute guest software, to detect an occurrence of a privileged event that cannot be handled by the guest



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software, to determine which one of the plurality of VMMs is to handle the privileged event (column 7, lines 50-55); and

Schneider discloses transitioning control to one of the plurality of VMMs (column 2, lines 6).

26. As per Claims 21-23, they are rejected for the same reason as Claims 2-4 above.

27. As per Claim 24, it is rejected for the same reason as Claim 10 above.

28. As per Claim 25, Schneider further discloses the privileged event occurs during operation of any one of a guest software and one of the plurality of VMMs (column 5, lines 57-60).

29. As per Claims 26-27, they are rejected for the same reason as Claims 1-2 above.

30. As per Claim 28, it is rejected for the same reason as Claim 10 above.

31. As per Claim 29, it is rejected for the same reason as Claim 25 above.

***Response to Arguments***

32. Applicant's arguments filed July 29, 2007 have been fully considered but they are not persuasive. The applicant states that Claim 26-29 have been amended to overcome the 35 U.S.C 101 rejections. However, the applicant only amended the claims and did not address the issue raised in the actual rejection. The rejection stands since paragraph 15 has not been amended for the reasons stated in the above action.

33. Applicant's arguments with respect to claims 1-29 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

34. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Bugnion et al. (US 6,944,699) System and Method for Facilitating Context-Switching in a Multi-Context Computer System.
- b. Fultheim et al. (US 2005/0039180) Cluster-Based Operating System-Agnostic Virtual Computing System.

35. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**.

See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Wilser whose telephone number is (571) 270-1689. The examiner can normally be reached on Mon-Fri 7:30-5:00 EST (Alt Fridays Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



MPW

September 26, 2007



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